information technology

city of sunnyvale strategic plan

strategic plan

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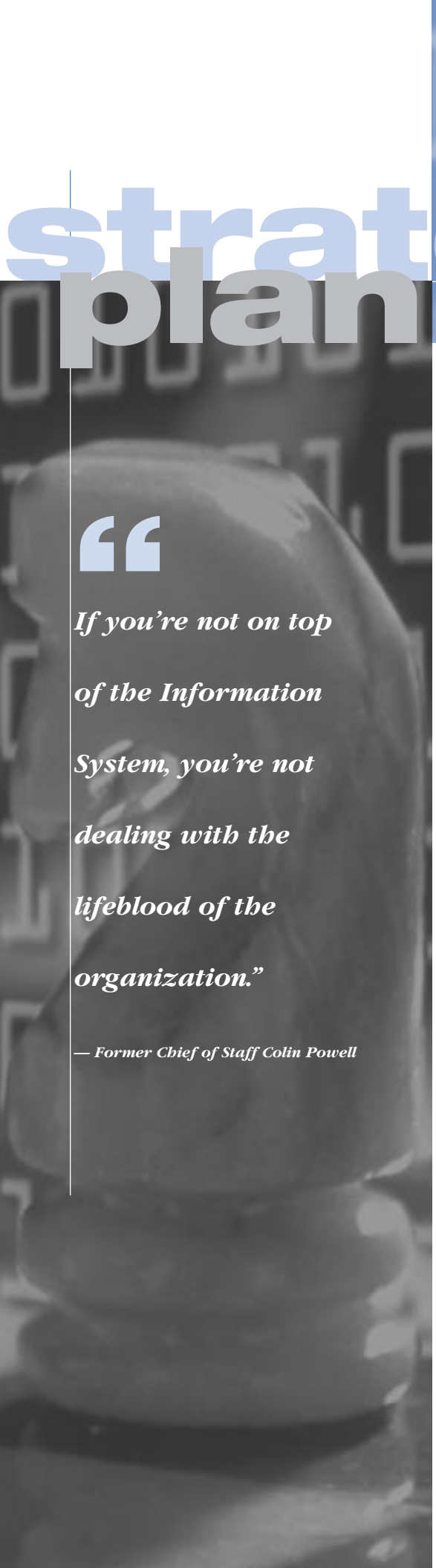
strategic plan

table of contents

strategic plan introduction



"If you're not on top of the Information System, you're not dealing with the lifeblood of the organization."

— Former Chief of Staff Colin Powell

Why does Sunnyvale need a Strategic IT Plan?

Advances in various forms of workplace technology have made the application of technology more economical to purchase, easier to install, easier to use, and easier to upgrade. In the absence of a current Citywide technology plan, there has been a tendency to view technologies as quick, easy, and low-cost remedies which meet short-term needs of maintaining and/or enhancing services while using fewer resources. This approach may meet short-term needs but does not address longer-term Citywide needs, and fosters the development of "islands of technology" which limit the City's ability to share information across organizational boundaries and to access information from other systems.

Both internal and external environments of the City are continually changing, and technology plays a critical support role in the development, implementation and enhancement of municipal services. As a result, the City recognizes the need to outline an overall approach for the selection, use, and support of technology that aligns with City resources, business needs, and processes. Therefore, a Citywide approach based on standards, consistency, and compatibility will make more cost-effective use of technology.

Consistent with the City's Commitment to Excellence, which serves as the City's Mission Statement, and the Planning and Management System (PAMS), the Information Technology Strategic Plan is outcome-oriented with emphasis on defining short-term needs and planning for long-term requirements in selecting cost-effective and practical technological solutions. By outlining effective management of the technological infrastructure, a strong emphasis can be placed on both external and internal customer services.

This Plan, similar to all strategic planning, is a process - not an end result. The Plan is a working tool to link the City's needs and goals with information technology to provide improved government functions and enhanced customer service. The Plan is intended to allow for change over a period of time and serves as a broad guideline for action that can be revised as technologies emerge and the City's needs change. As a working reference document, the Plan will be distributed internally to members of the City Council and all management employees.

Scope of this Strategic Plan

This is a strategic plan with a **five-year planning horizon**. Since it is difficult to predict the state of the information technology field beyond five (5) years, the City can only develop a flexible long-term strategy and not necessarily a detailed long-term plan. Yet, the primary focus of this plan will be on issues

that require a thoughtful, forward-thinking approach and not on today's short-term topics. Likewise, the plan is concerned with the City of Sunnyvale yet encourages the City to think "globally." Global issues will certainly be taken seriously, but the primary focus is on local issues.

This plan will address all facets of the City's communications and information processing services and infrastructures. It will strive to maximize on the benefits of high-level organizational cooperation while allowing individual and group creativity and flexibility. In fact, the City's historic mode of operation is consistent with the best current trends in information technology; i.e., a move toward greater group cohesiveness and commonality while allowing individuals and groups to be relatively unfettered by central control.

It is also important to note what this plan is not. This strategic plan is not a compendium of short-term tactical plans. Particular tactical plans for the implementation of clusters of interrelated projects are prepared as needed to meet the City's business requirements and conditions. Examples of possible future tactical plans are a) the creation of an electronic commerce infrastructure for the City; b) the rebuilding of the City's telephony infrastructure; and c) using information technology to enhance customer service.

Components of the Strategic Plan

This is the first comprehensive information technology strategic plan developed for the City. Therefore, the foundation for the plan includes trends in municipal government and the information technology industry; an outline of customers and services; and a Citywide vision accompanied by a mission statement, guiding principles, goals and objectives. A desired target environment is identified along with strategies for organizational effectiveness, partnerships, processes and a different approach to doing business.

strategic plan

strategic context

Overall Philosophy and Goals for the City

The City of Sunnyvale is a mid-size residential/business community where a positive orientation to people enhances the quality of governmental services and contributes to a high quality of life. Sunnyvale is a city with a philosophy based on a deeply felt commitment to the well-being of its citizens, in the home, workplace, and everyday activity. The City is committed to providing high quality service at the lowest possible cost to each and every sector of the community.

The broad goals and objectives of the City are found in the General Plan of the City of Sunnyvale. The General Plan provides a framework for the execution of sustained and responsible action by both elected officials and City staff.

The City of Sunnyvale has a long tradition of providing quality, cost-effective services and is recognized as financially sound and committed to excellence. The City has a dynamic management philosophy that uses the same principles that apply to running a corporation. Simply put, the City is managed as a business, and this compelling approach has been the key to Sunnyvale's success. The overall blueprint for managing the City is contained in a tool known as the "Planning and Management System" (PAMS). The Planning and Management System is characterized by a philosophical approach to innovative government. The PAMS provides a framework for:

- linking policy setting, management and evaluation;
- a long-range strategic planning tool;
- a system of communication that eliminates the guesswork; and
- a performance system that improves quality and cost of service delivery.

During the past five years, outcome management has been discussed in public policy forums. This approach has been instituted at the national level in several countries and respective local governments and sporadically at the national, state, and local levels in the United States. Outcomes used in these systems direct attention to the very highest level purposes and goals to be accomplished.

In 1994, the City began an in-depth review of PAMS to develop an overlay of high-level outcomes, which would address the larger question of how a program area is performing overall. Enhancements to PAMS are being refined which will:

- Focus on ultimate purpose (outcome) of service provision.
- Provide simple, accessible, on-line, timely information.
- Be understood and used by all staff.
- Be flexible and responsive to customer needs.
- Support interdepartmental effort.

- Measure achievement.
- Encourage continuous improvement.
- Assist with strategic planning, demand management, and market pricing for services.

This outcome management approach will be applied to information technology services and will be the basis for restructuring allocated resources for the Information Technology Department. The outcome management restructure for ITD is scheduled for completion and implemented in Fiscal Year 2000-2001.

In conjunction with the Citywide outcome management approach, a "Continuous Improvement" (CI) program is in place. This program focuses staff efforts and City resources on specific projects which have the greatest potential of achieving bottom-line cost savings, improving service quality, and enhancing customer satisfaction while addressing cost effectiveness, cost avoidance, and added value to City services.

General Trends in Municipal Government

Innovation Group West notes that there are a number of prevalent trends in municipal government that may impact the way cities do business. Based on local and national workshop and conference topics and policy initiatives taken by leading city and county governments, current major trends include:

- **Benchmarking and Performance Measurement** — This trend involves discovering where an organization's performance stands and provides a basis for comparison and improvement. Four types of benchmarking are recognized: (1) internal which compares one particular operation within the government structure to another; (2) competitive which compares an operation with that of a direct competitor; (3) functional which compares an operation with that of similar ones within the broad range of government; and (4) generic which compares operations from unrelated industries.

- **Privatization** — This trend explores contracting out municipal services to other governmental agencies or private sector companies. Activity-based costing or other forms of cost analysis characterize the process that serves as a basis for competitive bidding. Privatization may also be referred to as "outsourcing" or "outtasking" and is becoming an accepted practice in municipal government.

- **Outcome-based Management** — This trend focuses on the expected results (outcomes) of services within the community. Budgets and methodologies are redefined to measure performance results and drive continuous improvement

- **Customer Service (both Internal and External) and Community Participation** — This trend emphasizes a quality product for both citizens and internal customers. It is characterized by increased involvement and participation for employees and citizens, increased involvement with the business community, and the development of public/private partnerships.

- **Economic Development** — This trend produces a healthy business climate that fosters economic growth to retain and attract businesses. Cities are becoming more proactive in attracting new businesses and retaining existing ones.

- **Responsive Government** — This trend is characterized by the realization of the need to develop a new type of local government and the effort needed to develop that new form. This new way of doing business encompasses a belief in innovation and the practical means of accomplishing positive change.

- **Use of Technology** — This trend emphasizes the use of technology to continually enhance services delivered to the community. It recognizes the value of technology in working smarter, not harder.

- **Importance of Environment** — This trend recognizes the responsibility of municipal governments to protect and enhance the environment by addressing local and regional issues which impact natural resources, public health, and a community's overall quality of life.

With these broad trends as guidelines, the governmental organization of the future will:

be a flatter organization with less hierarchy.

be knowledge based.

give authority and accountability to all levels of employees.

require more individual risk and innovation.

recognize team performance.

Overall Trends in the Information Technology Industry

The information technology industry has changed rapidly at many levels, but one of the most important trends has been the movement away from the model of the single master computer

and the dependent slave terminal interface. A new more flexible model is emerging. This new model is based on networks of interconnected intelligent workstations and application-specific servers. The advent of the Internet and the World Wide Web have extended the network paradigm and have established communication standards that allow dissimilar computer systems to communicate from virtually any place in the world.

Information technology is becoming increasingly pervasive throughout our society as the hardware and software become more robust and comparatively less expensive. Sunnyvale will be forced by its business and residential customers to have compatible technological tools in order to conduct City business.

The following issues and trends are typical of the current state of the information technology industry:

- **Migration to open systems** — Diminishing need for one vendor, turnkey solutions.
- **Support for legacy systems while migrating to more robust systems** — The City must maintain existing legacy systems while replacing them over time.
- **Transition to a mostly digital world** — Telephony, broadcast television, video systems, audio systems, and emerging communication technologies are moving toward a digital foundation.
- **Advanced automation of communication** — Not only is communication becoming digital, but it is also increasingly automated.
- **More computing power to the desktop** — As the computer chip density doubles every 18 months and complementary components become increasingly cost-effective, the PC will become ever more powerful.
- **Transition from a host-centric architecture to an open distributed or network architecture**.
- **Increased importance of computer and telecommunications security as older modes of communication and commerce become obsolete** — more reliable security tools must be developed.
- **Management of information technology as a full life cycle resource** — As information technology becomes the lifeblood of organizations, a greater emphasis will be placed on managing it.

To be successful on a long-term basis, this Information Technology Strategic Plan acknowledges current and expected technological trends in order to position the City to take advantage of new and emerging technology in a timely manner. Therefore, it is critical that efforts focus on developing a Citywide service system that is compatible, consistent, and makes maximum use of information resources. It is also important to address all of the technologies being used by the City including: computer hardware and software; telephones; radios; print and copy services; office machines; records management and cable television/multimedia.

Trends in the communications arena include such topics as Integrated Services Digital Network (ISDN), Asynchronous Transfer Mode (ATM), fiber optics, digital networks, satellite, ground and microwave communications, and independent carriers. Trends in the software industry include on-line transactions processing, user interfaces and data base management systems. Use of next generation languages, prototyping tools and visually oriented development tools are addressing the need for faster software development. Hardware industry trends are changing at an unprecedented pace, and breakthroughs occur about every eighteen-months and have moved toward distributed processing, "foreign" device interconnectivity, and data storage and retrieval devices such as optical disks.

Additionally, digital technology is slowly replacing many analog technologies. More information is moved faster via digital technologies; records management is and will continue to be enhanced by digital imaging; printing/copying services will be based solely on digital reproductive techniques; radio communications will use digital technology to increase the number of frequencies available in each spectrum; and cellular communications are migrating to digital technologies for more secure transmissions.

Investigation of general industry trends provides valuable insights for strategic planning:

- Distributed computing is creating a multi-tiered information system environment consisting of large servers supplemented by smaller servers, which are connected to individual personal computers or intelligent workstations. "Dumb terminals" are fast becoming computer history.
- Information systems will be viewed as a necessary investment in the overall business planning and as a requirement to conduct future business. Personal computers and intelligent workstations will be viewed as necessary standard equipment for the workplace.

- Cost per unit of hardware output will continue to decrease; therefore, the investment in technical personnel to operate and fully utilize the hardware will be a critical factor in the future success of information systems. It is also necessary that the City adopt international standards to protect its technological investment and keep its options open for the future.
- The centralized information technology network environment will be replaced by networks that cross traditional agency jurisdictional lines and the decentralized environment will appear as a single processing environment.

The challenge for the City will be to maintain and support existing multiple systems while moving toward consolidation of systems, replacement of software applications, replacement of aging hardware, and the exploration of new applications. To accomplish this effort, it is important that all City staff be familiar with the Citywide direction for information technology. User support, participation, and patience are vital ingredients to success.

strategic plan

the customers and services of ITD

Internal Information Technology Users and Special Support Needs

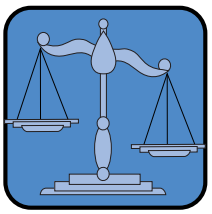
Not only is this Strategic Plan designed to include all information technology-based services used by the City, it is also designed to encompass the relevant needs of all City information technology users. To this end, it is important to understand and identify the components of the City enterprise, which are supported by information technology. Although the amount of use will vary, basic communications services are used by all City departments including: telephones, fax machines, electronic office equipment, copiers, desktop and major system computing applications, computing equipment support and training, records management, print and copy services, and daily mail receipt and delivery services.

Business goals and needs of the departments within the City enterprise are paramount to understanding the City's internal stakeholders; therefore, a brief overview outlining those departmental goals and special information technology services and support needs are summarized here.

Office of the City Manager

Provides the overall management of all City departments. Functions specific to this department include coordination of community relations; inter-governmental relations and legislation; Citywide volunteer services; organizational excellence activities; City Clerk official records; and human services. Direct support for the Mayor and City Council are also provided through this department.

Special services and support needs include Internet connections, and CityLink, an on-line service used to obtain state and federal legislative information. This department also makes extremely heavy use of records management services and print/copy services to produce a variety of reports, agendas, minutes, financial publications, and informational publications for citizens.



Office of the City Attorney

Provides legal advice to City Council, Boards and Commissions, City Manager, Department Directors and staff. Prepares ordinances, resolutions, legal opinions, contracts, agreements, reports and litigation documents. Represents City as legal counsel in proceedings in state and federal courts, as well as in administrative hearings before other governmental agencies. Reviews documents prepared by other departments. Monitors relevant developments and issues with respect to state and federal court

opinions and legislation. Maintains the Sunnyvale Municipal Code.

The Office of the City Attorney requires high-end computing, telecommunication, and document production support including high-speed Internet and on-line access to legal research (e.g. LEXIS, Westlaw) and governmental databases (e.g. CityLink); the CodeMaster municipal code database system; and high quality, dependable word processing, reproduction, and document control systems.

Department of Community Development

Provides planning and coordination with private and public developers to encourage suitable development and maintenance within the City. Reviews, establishes, and administers municipal ordinances. Coordinates downtown redevelopment; promotes neighborhood preservation; updates the City's General Plan; markets for new businesses; administers Community Development Block Grant funds; and directs the development of affordable housing.

Special technology services and support needs include the SunGIS (an electronic permitting system), which is resident on a central file server system; cellular phones for building inspectors; and heavy usage of telephone/voice mail, personal computers, and printers.

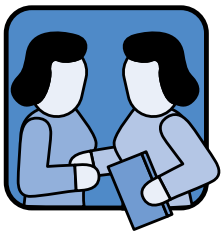
Department of Employment Development

Responsible for planning and implementing job training programs on behalf of the North Valley Private Industry Council which serves Sunnyvale, Santa Clara, Cupertino, Mountain View, Los Altos, and Palo Alto. Also offers programs for economically disadvantaged youth and adults, disabled veterans, the homeless, disabled individuals, at-risk youth, and senior adults. Support for these programs will become increasingly dependent upon information technology.

Department of Finance

Collects and manages all City funds by means of accounting, purchasing, internal audits, revenue collections, and budget preparation and monitoring.

This department makes extensive use of technology services and support. The General Ledger System, Business License, Budgeting Cost Allocation System, Customer Utility Billing System, Fixed Assets/Management System, Equipment Purchasing Maintenance System, Accounts Payable, and the payroll module of the Human Resources Information System all run on central computer systems. All of these systems process data on an established cycle, and during the annual cycles (e.g. budget preparation and year-end), there is heavy use of computer and printing resources. In addition, water meter readers use radios for field communications, and utility billing customer service representatives rely heavily on telephones.



Department of Human Resources

Handles recruitment and selection, risk management, employee relations and benefits, compensation, administration, training, organizational development, and succession planning.

Human Resources uses a local area network that allows multiple users to process applicant data and test results on an automated recruitment application system. Human Resources also uses the personnel module of the Human Resources Information System that resides on the central computer system. Use of print/copy services is heavy to support recruitment, testing, and training functions.

Department of Libraries

Provides informational, educational, and recreational library services through a central library; and a Bookmobile provides outreach services to the community. The Library's automated library systems will be gradually upgraded over the next five years beginning with the

addition of a web interface to its existing system and access via the Internet to the World Wide Web and remote subscription databases.

The Sunnyvale Center for Innovation, Invention and Ideas (SCI^3), previously known as the Patent Information Clearinghouse, is nationally recognized and operated in partnership with the United States Patent and Trademark Office. Specialized needs for technology services include public database access through on-line services; X-Search-Trademark System workstations; a CD-ROM network; two Automated Patent System workstations; and video-conferencing facilities.

Department of Parks and Recreation

Manages Citywide programs and facilities related to the arts, recreation, sports, aquatics, golf, and tennis. Maintains approximately 350 acres of open space including all elementary school fields, parks, tennis courts, and landscaping around City-owned buildings. Maintains 62 City-owned buildings including custodial services, lighting, ventilation, and plumbing.

Specific information technology services include: A local area network at the Community Center Complex enables staff to access facility reservations and class registration systems; portable and base station radios provide communications between field staff and office staff; and the Civic Center card key system provides building security. Extremely heavy public telephone contact and extensive use of print/copy services for brochures, flyers, programs, tickets, and department reports also characterize these services.

Department of Public Safety

Provides a unique combination of Police and Fire services to the community. Due to the complex nature of its duties, this department relies heavily on information technology services and support to provide a full range of law enforcement and fire services.

Information technology services are critical to this department and four primary systems are utilized: Computer-Aided Dispatch; Records Management System; California Fire Incident Report System; and the Comprehensive Public Safety System provide around-the-clock operations. Extensive use of cellular phones, pagers, portable and mobile radios, mobile data terminals, audio visual equipment, and a local area network complete this department's dependence on ITD's services.

Department of Public Works

Oversees traffic engineering, street maintenance, street lighting, parking districts, solid waste disposal, recycling, water supply and operations, sewers/storm drains, street trees/median island landscaping, vehicular fleet, and the industrial pretreatment Water Pollution Control Plant (WPCP). Provides engineering and design assistance for private development and develops and manages the City's capital improvement program.

This department relies heavily on information technology services. Field and office staff communicate using portable and base station radios. A local area network at the Water Pollution Control Plant enables staff to use the Maximo® maintenance system (consisting of equipment inventory, parts requisitions/inventory and work order creation and tracking modules). The fleet maintenance module of the Equipment Purchasing Maintenance System and the personal computer tracking system for tree inventory and maintenance will be converted to Maximo® in the near future. Other technology services include MicroPaver® (street paving evaluation system), Issue Tracking System (Public Works contracts), and SCADA Water Control System.

External Information Technology Users

Business goals and needs external to the operations of the City are of major importance to all City departments. Additional stakeholders include residents, local businesses and industry, community organizations, and other governmental agencies. Services provided to these stakeholders make up the core purpose for municipal government. In keeping with the City's Commitment to Excellence to provide high-quality, cost-effective, and responsive services, technology has either a direct or indirect impact on customers served by every City department. Accurate, timely, and easily accessible information is vital to a well-informed citizenry and business community. To support its citizens and businesses, the City of Sunnyvale is one of the few

cities that publishes a staff report for virtually every City Council action on the City web site. In addition, technology is used to enhance the global business advantage to businesses located in Sunnyvale as well as to encourage the relocation of businesses to the City.

The current trend toward using information technology to provide public access to city, county, state, and federally generated information will continue. Currently, the City provides access to this information through on-line workstations at the Sunnyvale Main Library and the Sunnyvale Center for Innovation, Invention and Ideas. Additionally, the City maintains twenty-four hour, seven day a week public access to the City's web site and the Sunnyvale Direct Information Access Line (SunDIAL), an automated citizen information system which provides access to City programs and services. Sunnyvale recently developed one of the first building permit systems that allows City customers to process permit applications (including building plan submissions) via the Internet. Future plans include public Internet access to the City's geographical information to assist anyone wishing to buy a home or do business in Sunnyvale. Ultimately, most City operations will be reengineered in order to benefit City customers who wish to conduct business with the City from anywhere and at any time. This will require the City to develop a new Internet and automation-based mode of operation.

Citywide Services Offered by the Information Technology Department

This Strategic Plan is designed to include all information technology-based services in an integrated, efficient, and economical fashion by outlining a Citywide approach to acquisition, support, and training. The Citywide technological services which support various aspects of all City business are defined in the following four categories.

Acquisition and Maintenance

Acquire and maintain the following types of equipment:

- Telecommunications-City's internal telephone systems; outside telephone service for voice, data, and radio circuits; voice mail; automated citizen information system; cellular telephones, and facsimile machines.
- Communications-Pagers, emergency and non-emergency voice and data radios.
- Electronic office equipment-typewriters, satellite copiers, audio visual, check endorsers, dictation units, and microfilm reader/printers.
- Computing-Desktop software applications (such as word processing, spreadsheet, database, presentation, and electronic mail), major system applications (i.e., general ledger, human resources/payroll, library, computer-aided dispatch, records management, etc.), desktop hardware and peripherals, central minicomputer and file server systems.
- Maintain and operate the City's central computing systems.
- Maintain software applications, appropriate documentation, and licenses for City systems.

Technical Support and Training

- Provide technical assistance and troubleshooting for desktop computing equipment, local area networks, and other information technologies.
- Provide over-the-telephone assistance to City staff on desktop software applications and other ITD-related services.
- Provide training through the Information Technology Training Center, which includes access to computer facilities, software tools, and classes in software, telephone, radio, and office equipment use.
- Provide project management for ITD-related projects.

Information Services

- Process and distribute U.S. and interoffice mail.
- Provide a centralized, in-house print and copy facility.
- Provide an internal permanent records management system for City documents.
- Produce and distribute an electronic version of the City's in-house telephone directory for more current and updated information.
- Develop and provide an efficient means to store and process transactional and analytical information.
- Provide government cable channel broadcast services and administer cable and other franchises.
- Provide and support internal and external web services.

Technology Planning Services

- Assist City staff in reengineering business processes.
- Assist City departments in developing proposals for information technology projects, including cost/benefit analyses, development of technical specifications, and requests for funding, if needed, for new or enhanced technologies.
- Provide centralized contract management with all technology equipment, hardware, software and network suppliers/vendors.
- Prepare chargeback costs (rental rates) to City departments for ITD equipment and services.
- Provide leadership in fostering departmental relationships to remove barriers associated with the sharing of information.
- Prepare disaster recovery plans for critical computer and communication systems in conjunction with the City's Emergency Management Organization.

strategic plan

city wide information technology vision

The Vision

All City departments and external customers will realize benefits from technology planning; therefore, technology planning needs to be a part of each department's annual and long-range planning effort. The framework for such planning is outlined in the Citywide Information Technology Vision. It is important to keep in mind that the Vision is intended to encompass all information technology-related functions - not just computing functions. The Vision is best described by the following:

- **To build a technology infrastructure that establishes bridges between data "islands" and supports the City's goals, missions, and economic development strategies.**
- **To develop Sunnyvale's Rational Information Systems Environment (SUNRISE), which is a comprehensive technology plan designed to protect the City's existing investment in information resources and to increase information support services to both the City's internal and external customers.**
- **To develop a set of internal standards and guidelines based on an "open systems" distributed approach.**

Sunnyvale's Rational Information Systems Environment (SUNRISE)

The fundamentals of SUNRISE provide a strategy to assist the City in moving toward the Vision and include the following actions:

- Install a "data highway" or network and connect all workstations so that they can send and retrieve information. Information servers will be centralized to provide control, accessibility, and ease of maintenance while users access information through desktop workstations, each with a preferred method of interface. The desktop will be the focal point of individual interaction with department-specific applications and other City users.
- Provide users with more convenient and timely access to information which will enhance decision-making processes and customer service. Most of the common forms of human communication (e.g., speech, full-motion video, static graphics and images, and text / numeric characters) will gradually come together on the desktop as an integrated system.
- Develop an integrated set of City information repositories. City information will be thought of as valuable assets to be used appropriately to improve City services. The use of modern database technology will facilitate rapid

access to information, reduce duplication, enhance response to the community, and sustain a consistent level of service to both internal and external customers.

- Value innovation as a critical means to improve City services. Develop a Citywide focus on technology that is driven by business needs and a shift from dependence on ITD staff to shared responsibility with departmental staff. This shift in philosophy will encourage departments to become more self-sufficient, productive, and technology literate while ITD staff becomes more knowledgeable about the overall business of the City. Intensive cooperation, creative problem solving, and training are required to support this philosophical change.

- Move the City's operations toward "zero latency" thinking. Zero latency, in this context, means no unnecessary delay in business processes. In other words, we should envision zero lag time between process steps. Modern information technology supports this approach.

Mission of ITD

The overall direction for the Information Technology Department and the Strategic Plan is contained in the Department's Mission Statement, which is consistent with the SUNRISE vision.

Provide information technology-related leadership to both internal and external customers by:

- Developing ITD internal staff skills to support customer departments, anticipating and identifying evolving technological trends, and fostering a broad understanding of our customers' business functions.

- Identifying, providing, maintaining and replacing information technology-related tools and systems which support the City's mission

- Providing training and education to develop a technology literate work force characterized by a standard level of core skill competencies.

- Working closely with each customer department to identify and support their information technology needs. Treating the customer with respect, addressing problems immediately and always following up regardless of the result.

- Assisting customer departments in reengineering and automating their processes to increase efficiency and effectiveness while encouraging and supporting continuous improvement.

- Empowering our customers to become more self-sufficient and gain the technological confidence to utilize the full potential of the tools available to them.

And, finally "Expect the Best". Realize there are strengths, possibilities and latent richness in all situations, people and events. ITD is to provide consistent and unparalleled service while continually seeking knowledge and growth.

Guiding Principles

Evaluating technology applications for City use is not an easy task, and it has become apparent that performance-based budgeting alone will not provide an adequate basis to support information technology decisions. To address this concern, the City will use a set of "guiding principles" to focus decision making and to govern, monitor and continually fine-tune the subtle benefits of technology. The overview of the "guiding principles" emphasizes interoperability, low costs and user empowerment to increase productivity and effectiveness.

Principle 1 — All major new technology projects affecting processes or systems used by multiple departments will be subject to review by the Continuous Improvement Panel and Executive Leadership Team that represent all City departments.

Expected Outcome: Continuous Improvement Panel and Executive Leadership Team will be more involved and will develop a clearer understanding of Citywide departmental priorities while supporting IT goals.

Principle 2 — Hardware and software acquisitions will support overall Citywide IT goal of data sharing.

Expected Outcome: Duplication of information and cost associated with creation of duplicate information will be reduced.

Principle 3 — Staff will have equitable access to information and response times will be consistent across the City recognizing the fact that some departments (such as Public Safety) may have a more critical need for access to specialized systems (E-911).

Expected Outcome: Response to customers will be improved, more timely, and more accurate.

Principle 4 — Hardware and software acquisitions will not negatively affect the management or operation of the Citywide network.

Expected Outcome: Network capability will be maintained.

Principle 5 — All departments will use the Citywide network.

Expected Outcome: Preparation of information will be consistent and duplication reduced.

Principle 6 — Only proven technology will be used.

Expected Outcome: Risks to technology investments will be reduced.

Principle 7 — System users will be responsible for functional use of their systems.

Expected Outcome: Users will become more self-sufficient and technology literate.

Principle 8 — Non-confidential data created or obtained within the City belongs to all departments, not any particular department, division or individual.

Expected Outcome: All users will have access to information and duplication will be reduced.

Principle 9 — ITD will act as an application and data clearinghouse for City departments.

Expected Outcome: Departments will be able to share and leverage scarce information resources.

Principle 10 — IT acquisitions will support business process improvement.

Expected Outcome: Staff effectiveness, efficiency, and customer service will be improved.

Principle 11 — Use of technology will support ongoing planning processes.

Expected Outcome: Support of Citywide goals and objectives will be enhanced.

Principle 12 — Core applications must adhere to established IT architecture.

Expected Outcome: Technology compatibility will be maintained.

Principle 13 — Projects will be undertaken only when department(s) that own(s) the process has sufficient understanding, involvement, and commitment to the project.

Expected Outcome: User involvement and empowerment will minimize the chance of project failure.

Principle 14 — Commercially developed software applications will be used whenever available.

Expected Outcome: Costs associated with research, development, and analysis will be reduced.

Principle 15 — Consistent and fair criteria will be used to prioritize all work requests.

Expected Outcome: Improved internal customer service and perception of ITD as viewed by other City departments.

Principle 16 — Service Level Agreements will be developed with each department.

Expected Outcome: An ITD insurance policy charting precise service levels of support which fosters mutual understanding between ITD and customer department regarding services provided and resources required.

Expected Outcome: Release and support phases of an ITD project life cycle will be customer-oriented, therefore, resulting in enhanced customer service.

Principle 17 — City staff will use IT resources for City business purposes ONLY.

Expected Outcome: IT resources will be used only for functions related to City business.

Anticipated Value-Added Outcomes

As noted in the Information Technology Vision, components of SUNRISE, and the Mission Statement, well-planned technological applications are characterized by long-term flexibility, make the following "value-added" contributions to the way the City does business:

- Decision-making is enhanced by providing accurate and timely information.
- Networking capability is increased by providing more convenient and timely access to information.
- Duplicate information and staff time associated with duplicating information is reduced.
- Technological compatibility is increased and use of information resources is enhanced.
- Consistent service levels are maintained.
- High level of customer service is maintained based on more accurate and timely information.
- Empowerment and productivity of City staff are increased through self-sufficiency.
- Cost savings for the user are increased based on improved user productivity.
- Response time to legal and regulatory issues is better maintained.
- Innovative approaches to automation are encouraged.

strategic plan

IT strategic goals and objectives for the city

Information technology strategic goals are concerned with the future of the entire enterprise and support how the City conducts internal and external business, provides services, promotes customer services and satisfaction, and manages Citywide information systems.

Success in implementing this Information Technology Strategic Plan hinges on meeting the following goals and related objectives:

Goal 1 — Develop Integrated Information Processing Network

- Install a digital network that connects all work sites.
- Develop workgroup-oriented local networks within City buildings and building complexes.
- Create an integrated set of wide area networks between City buildings containing local networks and outlying facilities.
- Develop mobile networking where required.
- Increase the flow of City information over the evolving digital network replacing the conventional means of paper, telephony, and person-to-person.
- Develop a set of common, Citywide data repositories and data access methods based on a common understanding of City data and databases.

Goal 2 — Standardize Technology Acquisition Processes

- Develop internal standards and guidelines based on an "open systems" distributed approach.
- Develop an organization-wide awareness program concerning the need to optimize the City's information technology infrastructure.
- Utilize the Continuous Improvement Panel where appropriate to determine major priorities and resource expenditures for hardware and software acquisitions before forwarding proposals to the Executive Leadership Team.

Goal 3 — Empower Technology Users

- Develop a desktop or end-user focal point for individual interaction between ITD and the user department.
- Acquire hardware and software solutions that respect the requirement for City staff to do their jobs without unnecessary disruption.
- Develop a comprehensive end-user training and education program using various learning techniques and tools.
- Continue to enhance customer support services.
- Organize, promote, and support user groups within the enterprise.
- Evaluate ITD effectiveness with ongoing performance measures and user satisfaction surveys.

strategic plan

target environments

A target environment is a desired end result. It is a collection of system elements that in their totality make up a whole environment. A target environment embodies the prerequisite tools and infrastructure, and it has both business and pure technological dimensions. In order to achieve the City's information technology goals and objectives, a target environment is needed. Appendix A contains a more detailed discussion of the City's target environment and a chart depicting a functional overview of the City's network services.

Target Environment for Business Processes

Over the next five years, where appropriate, the City is likely to change many business processes, including the following:

Electronic-based Communication

1. Electronic meetings (e.g., videoconferencing and remote document sharing) will replace SOME physical meetings.
2. Electronic support for group decision-making (e.g., electronic brainstorming, real-time analysis, etc.) will replace current methods.
3. Electronic mail will gradually replace most paper mail (at least within City government).
4. Electronic mail will become an established means, but not the only means, of communicating with City residents and external entities.
5. Electronic publishing will initially replace most current internal publishing efforts (e.g., policy manuals, newsletters, resource guides, etc.).
6. Electronic publishing (most likely via web services) will become an accepted means to communicate with citizens and external entities.
7. Digital voice radio and data communications will replace existing analog systems.
8. Single, consolidated radio system for emergency and non-emergency users will replace two dedicated systems now in place for Public Safety users and non-Public Safety users.
9. Integrated voice telephone system and voice mail system will replace existing stand-alone systems for each application.
10. Wireless data communications will replace older mobile data terminal technology with notebook personal computers for Public Safety

Electronic-based Services and Workflow

1. City services will be transformed from a paper form model (micrographics) to an electronic transaction model.
2. City workflow (e.g., tracking building permit requests) will be transformed by systems that will accurately track an activity's current status, resource commitments, etc., in real-time.
3. An electronic-based document management system for the City will replace the current paper-based system.
4. City staff and residents will have real-time access to appropriate City information in order to better dispense and receive City services.
5. New electronic tools will enable the City to provide more efficient customer oriented services.
6. Distributed printing and consolidation of centralized print/copy/mail services will enhance operations.

Target Environment for Information Technology

An information technology environment characterized by the following is necessary to enable new business processes:

1. Every City employee with a personal computer will be connected to the City's network.
2. The City network will be capable of adding new users and new network applications, as they are required.
3. The City network will generally evolve with regard to the following applications: simple text messaging, transaction processing, simple graphics/ images, and complex graphics/ images /video/ audio.
4. The City network will generally evolve with regard to the following architectural reaches: City Intranet (the workgroup, the department, within City government, including remote City facilities) and the Internet.
5. The City's Intranet will provide a safe, productive work environment for the City's internal business operations.
6. The City will utilize the Internet as another public communications environment (like the public telephone network) to conduct City business.
7. Until other technologies become proven and cost effective, the City network will be based on fiber optic cables between buildings and Category 5 copper wire within buildings. Wireless technology will be used only if it provides sufficient bandwidth and when mobility and/or the unavailability of wired connections are paramount.
8. The City will continue to develop a responsive electronic messaging infrastructure to support the City's increasingly demanding communications and workflow requirements.
9. The City will develop an integrated applications environment that will enable inter-departmental information sharing and business process integration so that City customers will perceive the City as a seamless service provider.

strategic plan

organizational strategy

In conjunction with the Citywide information technology goals and objectives and the identified target environment, it is important for the City to have an organizational strategy that relates to each major project and identifies the human resources needed to achieve the desired results. This organizational strategy establishes the necessary framework for the development of the appropriate tactical plans for major projects.

Project Review and Approval

The City Manager has appointed a Continuous Improvement (CI) Panel which will review and recommend projects to the Executive Leadership Team and make sure that necessary resources of time and money are available to accomplish desired results. A major characteristic of the CI program will be the leveraging of technology to streamline processes and reengineer the way the City delivers services. Both innovation and use of technology are vital to enhancing the efficiency and effectiveness of City services, and it is for this reason that the Director of Information Technology serves as a permanent member of the CI Panel. Each project will consider investments in new equipment or new applications of technology as potential solutions.

The type of project and level of impact to the City determines at which management level the approval should be made to accomplish the desired results. The requesting department should present options to the decision makers including to do nothing, review the alternatives, and select the ideal option. The analysis of each option should include the benefits to the customers of the department and any financial or technical concerns for the alternative solutions.

The following table shows an example of the type of project and its impact together with the level of decision making required.

Question	Project 1	Project 2	Project 3	Project 4
What are the desired results of the project?	Reengineer a process or processes that affect the entire City	Reengineer a process or processes that affect a single department	Incremental improvement of a process or processes	$$ savings in a single department
Who are the decision-makers?	Continuous Improvement Panel and Executive Leadership Team	Director of ITD, Department Director, and City Manager	Director of ITD and Department Director	Director of ITD and Department Director
What type of study is needed?	Long-term Data identifying dollar impact over 10 and 20 years	Cost Benefit Analysis	Data identifying dollar impact on operating budget	Data identifying cost savings in operating budget
What information is needed to initiate request for new system or equipment?	Raise consciousness	Highlight options and implications	Detailed description of the proposed system or equipment and the options	High level description of system or equipment

ITD will take the lead in working with other departments to identify the need and then select, upgrade, or replace equipment. The well documented needs of the customer will outweigh the "needs" of ITD. ITD and the requesting department will jointly present the proposed new project to the Continuous Improvement Panel and Executive Leadership Team.

Specific steps for new equipment acquisitions, including requesting additional funding if necessary, are included in the General Services Policy section of the PAMS manual. Several of the significant steps are described below.

- Department Director approves and submits preliminary request for new technology to Director of Information Technology. The nature of the request to be defined as: cost savings within the requesting department; an incremental improvement within the requesting department only; reengineering process in requesting department only; or reengineering process affecting multiple departments or Citywide.
- ITD staff works with the requesting department to clarify the need, identify the appropriate equipment or system to meet the need, and prepare initial one-time cost and ongoing operating cost information to submit to the Director of Information Technology.
- The Director of Information Technology reviews the request and determines whether the request should be forwarded to the next approval level for further consideration or categorized as a "just do it" project. "Just do it" projects are defined as requiring no resources outside the requesting department or technology acquisition; therefore, no further review/approval is required.
- For projects needing further approval, the Director of Information Technology, ITD staff and requesting department representatives prepare a cost/benefit analysis and/or capital project sheet with recommendation to proceed. Criteria for cost/benefit analysis to include reference to the City's Continuous Improvement Program and PAMS for new equipment.
- ITD Director and Department Director present request to the City Manager or to the Continuous Improvement Panel and Executive Leadership Team to select and prioritize new projects in conjunction with the City's budget review process.
- ITD submits selected projects to City Council for approval of funding for the following fiscal year as part of the Citywide budget adoption in June.

Human Resource Strategies

There are two main human resource strategies. The first strategy is ITD's role in providing technology to develop Citywide core competencies. The second strategy is determining core technical competencies to enable a shift from dependence on ITD to shared responsibility with customer departments becoming more self-sufficient and technology literate. To support these organizational strategies, cooperation, creative problem solving, and training are essential.

Citywide Core Competencies

The core competency concept represents the significance of people in an organization. For instance, one of the key commitments that the City has is an emphasis on customer service and/or satisfaction. Therefore, an important core competency is the customer service skills of the staff. Information technology is a mechanism to enable City staff to enhance and improve core competencies expected by the organization.

Core competency is a way to focus a listing of the strengths of an organization into a clearly understood pattern and identify how to better move into the future. The purpose of core competencies; therefore, is to determine what skills staff currently possess, what skills the City needs staff to possess, and how the City will develop the core competencies it desires.

The Information Technology Department will work closely with the Continuous Improvement Panel and the Human Resources Department to leverage technology where possible to facilitate the training and development strategies of City staff.

Core Technical Competencies

The Executive Leadership Team and the Information Technology Department will share the lead in developing a Citywide technological philosophy which encourages non-technical staff to become more self-sufficient, productive, and technology literate while the ITD staff becomes better informed about the overall business of the City. To transition the organizational philosophy from dependence on the ITD technical staff to a shared responsibility with non-technical customer department staff, an enhanced set of technical skills and abilities will need to be developed. Core technical competency levels will be established for City staff and will be used as a basis for skill development and measurement of the benefits of technology.

ITD acknowledges that employees must have certain technical core competencies to not only enhance their current job responsibilities but also to provide a means to meet future requirements for growth within the City. Rapidly changing business trends and new technologies also impact an organization's need for continuous learning. Therefore, it is recognized that skill requirements for staff will continue to increase in response to the rapid technological and business changes.

Before committing training needs to keep pace with these technological and business changes, an organization must define computer literacy for different job classifications and levels of positions by establishing minimum qualifications and knowledge requirements. Computer literacy is the ability for staff to use **and understand** the technology resources available to perform the essential functions required in a specific position. The Information Technology Department, in conjunction with the Human Resources Department, will develop a matrix of the minimum computer literacy required for the various positions within the City.

Once the minimum requirements are established, a training program can focus on the basic needs to empower City staff to become more technology literate. As City staff become more knowledgeable, expected results will be improved customer satisfaction, improved operational efficiency, self-sufficiency, productivity, and teamwork. This approach enables the ITD staff to provide technical support for those more critical service areas and allows ITD staff to devote more time to proactive research and planning. An additional benefit to this approach is that ITD staff will become more knowledgeable about departmental functions and needs for technological applications and support. This role will place more emphasis on providing a resource/clearing house and consulting services with less emphasis on basic, routine technical support.

Some people assume that information technology skills apply only to those people in ITD. This assumption must be eliminated because information technology is or will pervade almost every part of a City employee's activities. Ongoing information technology education should be an expectation for virtually every City employee. **Information technology is not an extra or specialized skill any longer but rather a key component of everyone's routine working responsibilities**.

Training is a key mechanism enabling the City to facilitate the City's organizational emphasis on human performance management. Current trends in training include:

- computer skills training;
- a shift from training to performance;
- measuring performance outcomes as a result of training; and
- a shift from training to learning.

Training is an investment in increasing City staff's efficiency, and the return on investment must be measured as well as the training itself. The evaluation of training must measure the business results attributable to training, not the trainees' reaction to the course. The Information Technology Department will incorporate these measurements in its new outcome management structure.

In addition, the method of delivery for training will consist of a variety of approaches. ITD will take the leadership role in providing training through the following methods:

- self-paced training, formal class instruction, and video programs facilitated by the Information Technology Training Center;
- just-in-time, electronic, and multimedia alternatives;
- teleconferences and distance learning programs via the Internet , Intranet, or satellite downlink;
- general and specific application training, as needed by departments, taught by ITD staff, other departmental staff, or contractual trainers;
- on-site instruction/training for applications such as satellite copiers, telephones, fax machines, pagers and radios; and
- written and on-line reference information, "quick tips", and "how to" material.

Within ITD, particular emphasis will be placed on developing marketing, customer service, communications, interpersonal, and consulting skills of ITD staff. Prior to ITD staff recruitment, job classifications will be reviewed to ensure that they accurately reflect skills needed to be successful in the emerging technology environment.

Internal cross training will be used and is expected to improve communication and information sharing among employees. ITD staff will be assigned primary and secondary tasks, keep operating procedures current, and inform co-workers so functions continue in their absence.

strategic plan

partnership strategy

Internal City Partners

ITD provides technological support to all City departments; therefore, user involvement is critical to the success of the ITD Strategic Plan. The link between ITD and the user's ability to fulfill critical business functions must be understood. Clearly defined roles and responsibilities result in improved customer service and consistent operations. To address this important link, ITD developed a Citywide Service Level Agreement (SLA) which outlines service levels generic to all City departments. A customized SLA is prepared and attached to the Citywide SLA for each department. The customized SLA outlines support levels and shared responsibilities specific to that department.

The SLA serves as a framework for technology support provided by ITD and is an effective management tool, which establishes connections between specific business functions and specific ITD services. Jointly developed and approved by authorized representatives of both ITD and the customer department, the SLA describes services needed and the responsibilities of each department in fulfilling the terms of the agreement. Use of this partnering tool assures customer input for information technology planning and provides a basis on which to measure ITD performance. As an integral part of the SLA, a periodic review is established to update terms of the agreement as technology and business needs change.

External Partners

The City has several external partners who provide technological assistance and support to City business needs. External partners may be other local, county, state, and federal governmental agencies which provide services to City departments or participate in joint ventures. Other external partners may include businesses and the development of public/private agreements for outsourcing activities and services.

strategic plan process strategy

Process Change Strategies

One of ITD's roles is to provide support for process change within the City. The City must continually review its goals and outcomes. As the City reviews its organizational outcomes, departments must also review their means to achieve these goals. In many instances, the process may not have kept pace with change or the process does not support the City's overall strategic outcomes. Just as the City has a long-term planning process in the Planning and Management System for its finances, its municipal infrastructure, and other vital areas, the City also needs a change strategy. For individuals or organizations to be successful over the long run, they must occasionally or continually change. However, change for change's sake is not an ideal strategy.

This section of the plan describes a strategy that supports change as it relates to information technology-oriented change. The preliminary assumptions of a process change strategy are:

- Organizational processes represent and characterize the fundamental activities of an organization.
- How and what "things are done" by an organization can be measured, observed, and demonstrated.
- Any organizational process can be changed, although most organizational processes have a legitimacy and semi-permanence that resists change.

ITD understands technologies used elsewhere within the City and can take advantage of applying those technologies wherever possible in the redesigning process. ITD also reviews the research of emerging technologies that can facilitate process change. Therefore, it is critical that City departments ensure ITD staff is involved in the process change effort since they often have a better understanding of the capabilities and availability of technology.

Generally, process change requires technology to improve information systems to find new ways of gathering information or eliminating the need for an old technology (such as electronic records management systems replacing paper and microfiche systems). Other information technologies used in process change include shared relational databases, system integration, electronic mail systems, telecommunications networks, and the Internet/Intranet.

Based on these assumptions, the elements of an information technology process change strategy are:

- **Communication** — Decisions to change a process should be communicated to all process stakeholders as early as possible and as often as necessary. Communication is critical to the successful implementation of

the process change and removes unnecessary obstacles. It is important to recognize and understand the fear of change can be minimized with effective communication.

- **Process Stability** — Although change is the key factor, process stability should be an overriding consideration. The following is an example of process stability while undergoing change. When a City repaves a major street, the traffic engineer designs a temporary bypass to redirect traffic while the change in the street is underway. Likewise, with virtually all processes undergoing change, accommodations must be made to ensure that the process continues with minimal, if any, disruption.
- **Project Management** — Process changes must be managed, just as any resource, project or activity. They do not happen by themselves or by management decision. Process changes need management support and involvement, a planned and justifiable budget, a schedule, sufficient staffing resources, contingency plans, etc.
- **Customer Needs** — A comprehensive review of the customer's needs is required to set the goals for the process change to develop vision, and to achieve buy-in from the customer.
- **Appropriate Strategies** — Process change strategies must fit the circumstances. An organization or project team should never blindly adopt an old strategy that worked in another city or in a different context. The phrase, "this is the way we did it in X" is disrespectful to the process about to undergo change. However, past experiences or strategies from Sunnyvale or any other organization should be used, whenever appropriate.
- **Organizational Responsibilities** — The responsibility for process change should be directed to appropriate areas and levels within an organization. Simple, operational changes should be pushed down into the organization as far as possible. On the other end of the spectrum, major process changes that fundamentally alter organization-wide processes should be pushed high in the organization.
- **Organization-wide Change** — Greater care and planning should be directed toward activities that reengineer an organization's fundamental processes.

It is also important to assess staff skills and retrain staff as needed to prepare for the process change as well as to modify the organizational structure. In addition, the continuous improvement effort should begin as soon as possible after the process change is implemented to encourage ongoing improvement of the process.

strategic plan

financial strategies

Resource Allocation Plan

The City of Sunnyvale uses a Performance Audit and Budget System (PABS) which is a fully integrated component of the City's Planning and Management System (PAMS). The PABS integrates the goals and policies of the General Plan into the budgeting process and provides an efficient and effective way to budget resources and to provide authorized services to the public. This Performance Budget is organized by programs, objectives (service delivery plans), and tasks (activities) thereby directly relating labor, materials, and other operating costs to the results that are to be produced. This linkage provides the means for measuring both the efficiency and effectiveness of resource utilization.

The Citywide Resource Allocation Plan (commonly referred to as the Budget or RAP) is a tool to implement goals, policies, and objectives of the City Council. The RAP is structured to establish specific service objectives and allocates resources to accomplish those objectives at the identified service level. There are three major principles of the budgeting process.

a. Program Managers have flexibility to redistribute resources within programs to maintain (not increase or decrease) approved service levels of the service objectives.

b. Changes in service levels not currently identified in the Ten Year Plan will be considered separately from, but parallel to, the base budget process.

c. The budget process is based on a 24-month (two fiscal years) timeframe.

As a General Services Department, the Information Technology Department is considered an internal support department responsible for the overall planning, review, approval, procurement assistance, and maintenance of all information technology-based, non-consumable equipment for use by City departments. ITD's overall General Services responsibilities include the planning and monitoring of capital budgets for the purchase of all replacement and new equipment in the areas of information processing, electronic office equipment, and communications equipment.

For these areas, ITD develops a 10-year and 20-year budget in the context of the Resource Allocation Plan. Knowing that all equipment will have to be replaced and funding will be needed in the future, ITD uses an equipment rental system which charges back the costs to users and fully funds the budget for the General Services support and equipment assigned to ITD. Equipment is scheduled for replacement within an ongoing 20-year timeframe to continually update the infrastructure with newer technology. Charge-back costs are also

used to fund training, which is viewed as a part of the cost of using technology, to enhance and improve employee skills as technology changes.

Detailed information on the Planning and Budget System, Resource Allocation Plan, and General Services Policy is contained in the Planning and Management System Manual -Sections I through IV.

Major and/or New Technology Projects

The PAMS manual also contains information on how to obtain funding for major and/or new technology projects. Funding can be requested through a capital or special project that is submitted to the Finance Department each December. ITD's role is to work with departments during the year to review the need for any new technologies so that the appropriate information is available to prepare the capital or special project requests.

Funding for major and/or new technology projects may also be provided through inter-agency and public-private partnerships.

strategic plan information technology strategy

Alter Department Roles (Doing Business Differently)

New Roles for ITD

The Information Technology Department (ITD) is best defined as an "internal City department" which provides the delivery systems to support various aspects of all City business. As a General Services Department and an integral member of the City planning team, ITD provides the necessary leadership to develop a coordinated Citywide approach to technology and information systems management. This approach is based on standards, consistency, and compatibility while emphasizing cost-effective use of the City's information resources.

ITD also provides the link between the City's capital project and operating budget processes to ensure that resources for ongoing technology support are included in the City's Resource Allocation Plan. It is imperative that ITD be involved in the initial planning phases in order to facilitate organizational change by developing reasonable expectations that match technological capabilities with identified organizational needs.

The overall goal of the Information Technology Department is to position the City to take full advantage of business reengineering and technological advances as they relate to internal operations and services delivered to the community. One of ITD's core responsibilities is the ownership of the Citywide information systems architectures and infrastructures. It is ITD's responsibility to create and maintain a balance of power between ITD and the end user so that ITD can supply staff with the tools they need to perform their jobs more effectively. ITD's enhanced role is three-fold:

- to serve as a resource clearinghouse;
- to serve as a consultant; and
- to provide ongoing technical support and maintenance.

These changing roles will be reflected in the outcome management approach used to restructure budgeted resources for ITD. The new ITD budget structure is scheduled for implementation in Fiscal Year 2000-2001.

Resource Clearinghouse

ITD will maintain a matrix that lists information available to all City staff thereby reducing redundancy and outdated data. This information may be available in central databases or in departmental areas. ITD will also maintain a number of subscriptions for publications and technology reference materials that can be used by other departments. This service provides easily accessible

information and reduces the need for other departments to maintain similar subscriptions. Through annual contractual arrangements with organizations like the Gartner Group, ITD will provide access to national hotlines and central information sources for technology and research.

Consultant

Through staff experience, expertise, and knowledge, ITD will expand its role as a consultant to other City departments. Assistance and recommendations will be provided for selecting, upgrading, and replacing equipment. Operational processes and capital projects involving technological applications will best be developed with input from ITD in the early planning stages as well as in the implementation, operation and evaluation phases. This approach identifies what technology resources are available to implement the process or project and is critical to long-range budgeting.

Support

Installation, maintenance, and training make up this component of the ITD role. In partnership with other departments, equipment will be installed according to specifications, and every effort will be made to assure departmental needs are met. The hardware systems will be maintained by ITD staff or through maintenance contracts managed by the Information Technology Department.

The ITD Customer Support Center (CSC) will provide direct phone access for City departments to trained staff who answer technology-related questions and offer basic information on how to use the systems. A written work order process will continue to be used for larger scale needs requiring a technician or programming staff.

Training will be offered through several approaches. The recently enhanced Information Technology Training Center will facilitate self-paced training, formal class instruction, and hardware and software resources that are not available at other City locations. General and specific application training will be available. ITD staff, user department staff, or contracted trainers may teach classes. A selection of just in time, electronic, multimedia, video, teleconferencing, or Internet/Intranet training programs will be available to staff. Work site training will be available for applications such as satellite copiers, telephones, fax machines, pagers, and radios. In addition, periodic training and written information will be available on how to use the print/copy services, internal mail system, and communication systems.

The changing three-fold role of ITD will shift from a traditional programming and analysis role to one characterized by the following:

- Interacting with the entire information systems customer community to avoid a fragmented chaotic environment;
- Listening to customers to address needs and identify solutions;
- Consulting with and coaching customers to explore applications; and
- Facilitating self-help and self-training.

New Roles for City Departments

While ITD will change the way it operates, other City departments will undoubtedly embrace change too. The modern economy and citizens will continue to place great pressures on all governments to improve their services and products. Since Sunnyvale is in the heart of Silicon Valley, its citizens and businesses have very high expectations for city government. Consequently, all City departments will continue to be under enormous pressure to reduce costs while improving services.

City departments have many choices for service improvement, but undoubtedly the continually improving robustness and cost-effectiveness of information technology will be a major element in every department's service improvement plans.

For City departments to embrace information technology there is a need to foster supportive relationships and clarify responsibilities. Several of these new relationships and responsibilities are detailed elsewhere in this plan. However, a few are highlighted here:

- Departments are responsible for maintaining the accuracy of their databases.
- Departments are encouraged to embrace technologies that are cost effective and improve their services and products.
- Departments are solely responsible for their information content.
- Departments need to incorporate information technology into the fabric of their operations.
- Departments are encouraged to be proactive in reengineering processes (including cross-departmental ones) and developing departmental information technology plans and training programs while ITD retains a leadership and support role.

Enhance Customer Services

In addition to the primary roles identified for ITD, a customer service component is critical to this Strategic Plan. All functions of the Information Technology Department impact internal and/or external customers, and Citywide teamwork is vital to the success of the Plan.

ITD endeavors to be a "customer-driven" organization; therefore, following the City's commitment to customer service, ITD published "A Strategy for Customer Service" which outlines its customer service action plan and is characterized by the following philosophical statement:

> *We believe in meaningful service. Each of our jobs centers on meeting human needs. We believe that service excellence is both an attribute and an attitude. Simply put, we work at offering the competent and cheerful assistance that the people who depend on us deserve - the same consideration and efficiency that we, as citizens and neighbors, expect from others.*

As a component of the Information Technology Strategic Plan, "A Strategy for Customer Service" includes the following components:

- Organizing work around outcomes and meeting customer expectations;
- Balancing and optimizing the overall service system;
- Focusing on quality of services and making everyone in the organization responsible for customer service;
- Blending staff talents and working cooperatively to achieve goals, recognizing that customers have different needs;
- Improving City image and service attitude;
- Enhancing effectiveness of citizen communication and involvement; and
- Striving for continual, incremental, and breakthrough improvement in the quality of all products and service delivery.

Re-Engineer Technology Infrastructure

To achieve a cost effective inter-networking system, emphasis was first placed on the development of Citywide connectivity through a uniform network infrastructure, distributed computing, and relational database technology. To develop and share information across organizational boundaries, Citywide technology communications is supported by a 19-cell honeycomb fiber optics "backbone network" connecting major City-owned facilities. Initially, only two of the cells will be utilized; however, this unique fiber optic installation eases future upgrades of the backbone since new fiber bundles can easily be inserted into the spare cells. This feature ensures that the infrastructure can be easily expanded and upgraded to accommodate new services as needed and will not hinder the City taking advantage of future technological opportunities.

Phase I (City Hall Campus)

City Hall is connected with other City Campus buildings including City Hall Annexes, Public Safety Building, Main Library, and Department of Employment Development.

Phase II (Off-City Hall Campus)

Connectivity is also completed between the City Hall Campus and the following locations: the Corporation Yard; Senior Center; six Fire Stations; Center for Innovation, Invention and Ideas; Community Center; two Municipal Golf Courses; and the Water Pollution Control Plant/SMaRT Station® and Baylands Park. Each of these sites is wired with a Local Area Network (LAN) which is connected to the fiber optic backbone network.

This enhanced infrastructure facilitates movement from existing central host (mainframe) computing to departmental, decentralized computing. An open distributed computing approach allows the sharing of data located on different computer platforms and will protect a large portion of the City's current investment in hardware while allowing the City to expand on communications capabilities in the future. Sunnyvale's Rational Information Systems Environment (SUNRISE) based on this infrastructure, will appear as a single network composed of individual services and data with one common user interface, regardless of physical location or computer platform used to provide services and data. City departments will network internally and have the capability to access other city, state, federal, and national services while providing enhanced citizen access to community services and information.

Benefits of this re-engineered infrastructure are:

- Increased information support services to both the City's internal and external customers;
- Maintenance of departmental flexibility while providing a Citywide structure;
- Provision of more convenient and timely information for decision making and customer service; and

- Protection of investment in current applications and ease of movement to less expensive systems.

Retool Computing Technologies

The slow transition away from paper-based systems is shown by the distribution of financial transactions over the last 25 years. A generation ago, most financial transactions were processed by checks and cash. Now 89% of all value exchanged is handled electronically. However, only 21% of today's transactions are electronic. Large, efficiency-minded financial institutions have long understood the need to automate their financial transactions, and they process virtually all their transactions in an electronic mode. Small businesses and individuals have only started to embrace electronic transactions.

The logic for the decline of paper-based transaction systems is shown by the following cost of transaction table. It is clear that the "electronic handwriting" is on the wall.

	Cost of an individual payment transaction
Bank branch	$1.07
US Mail	$0.73
Telephone	$0.54
ATM	$0.27
Internet	$0.01

The table in Appendix B shows trends in the computing industry and serves as a model for the past, present, and future courses for the City.

Application Development

ITD, like most information technology organizations, has a formidable challenge ahead of it. Although computing from the end-user's perspective seems less complicated, from the computer professional's viewpoint, computing has become much more complicated. In a host-centric environment, virtually everything occurred on a central "host" computer or mainframe. All application development and production work was focused on one or more hosts. If processing slowed due to increased workload demands, a typical computer center director asked for funds to buy a bigger mainframe. Most computer programmers used COBOL to write linear, step-by-step application software. Networks consisted of a massive number of thick cables connecting the host computer to dumb terminals.

Not only must ITD reengineer itself organizationally, as other Sunnyvale departments are doing, but ITD must also retool itself for radically different computing technologies while simultaneously leading the rest of the City to a more flexible, "user-friendly" future.

Despite the challenges, ITD has a plan for application development that is consistent with the emerging open distributed computing model and the overall direction of the computing industry. However, ITD will not have a single, one-size-fits-all strategy. The specific version of the open distributed computing model to be implemented (i.e., thin client, fat client, or cooperative) may vary based on the application, available software, and/or available hardware.

To meet the more complicated challenges, ITD, like all progressive technology departments, must alter its application development processes. ITD must move away from linear programming environments based on procedural languages like COBOL. Legacy COBOL applications must be maintained as required, but they should be replaced by more modern systems as quickly as possible. To acquire and/or create these new systems, ITD must move toward a more complicated software environment that has become subdivided into the domains of back-end relational databases, specialized application logic services, network communication and messaging backbones, the presentation of shared information at the PC level, and standalone PC applications.

ITD must also move toward an object-oriented, reusable component architecture. Instead of creating or purchasing large monolithic software products from software vendors, ITD will increasingly purchase a comprehensive set of system tools that generically support a wide range of applications. For example, ITD should maintain a network and application architecture that supports common, generic ways to print documents, to provide data security, to send email, etc. The days of purchasing or building "standalone" systems optimized for individual departments, functions, or personalities are quickly coming to an end. The benefits of functional cooperation and easy exchange of data will overpower the rationale for isolated "turnkey" systems.

The new modular, cooperative architecture will allow ITD programmers and City staff to focus on:

- the specific business logic of the applications,
- training staff only on the business application, and
- isolating the specific application from generic functions.

ITD and its internal customers will not be required to learn or develop a new approach to printing, security, data access, data reporting, and email for

each business application. Such an object-oriented or component-based architecture will support greater system homogeneity, improved customer service, and more operational flexibility.

Another element of ITD's target software platform is a relational database standard. Although there is considerable discussion of more advanced object-oriented (OO) database systems; these OO database systems do not now exist and will not be production-ready for many years. Therefore, ITD will concentrate on the use of advanced relational database technologies.

Finally, ITD will focus on the acquisition, development, and reuse of improved user interfaces. ITD plans to support:

- graphical user interfaces, with greatest emphasis on the web browser;
- Intranet collaboration among departments;
- clearinghouse functions to catalog the user interface requirements for City departments;
- clearinghouse functions to catalog the user interface components that the City acquires from component vendors and those that are developed in-house;
- replacement of manual, paper-oriented processes with network-enabled electronic processes;
- problem reporting concerning technology and non-technology issues for both the Intranet and the Internet;
- progress monitoring of capital projects;
- electronic staff timekeeping;
- interactive voice response (touch-tone telephone applications);
- fax delivery-on-demand, both to internal and external users;
- touch-sensitive information kiosks; and
- other user interfaces as they become mature and cost-effective.

Data Architecture

As indicated in the previous section, relational database technology will be a key enabler for Sunnyvale's data architecture. **The most complicated ingredient in Sunnyvale's data architecture has less to do with technology and more with interdepartmental cooperation and business process reengineering**. Simply put, computer technology has matured to the point that most department heads within most organizations can no longer blame "technology" for being unable to share information with other departments.

There have been many well-publicized and not so well publicized cases in which departments have saved their organizations millions of dollars while providing improved services. Experts who study these reengineering efforts point to disintermediation as one of the key factors in their successes. Disintermediation in this instance refers to the act of eliminating unnecessary steps and actions in the process of sending, receiving, and searching for information. The Industrial Age bureaucratic model created a highly structured system with many manual and organizational controls. Modern management practices, coupled with a coherent information technology strategy, clearly indicate that a rigid bureaucratic model is now obsolete for most organizations. This transformation to a new mode of operation has many ramifications, but we will only focus on the database and process reengineering aspects.

If disintermediation is one of the primary cures for our current situation, what are the illnesses that infect us? One of these pathologies is departmental suboptimization. This is a classical organizational disease that prevents departments from working together. These departments typically operate as if other departments did not exist, except to serve them or an internal source for additional resources. It is common knowledge that organizations are much more successful when they are able to cure or arrest this disease.

One way to begin to eliminate unnecessary activities and barriers while reducing departmental underutilization is for City departments to agree on a new information processing and sharing model. **Instead of acquiring information systems as isolated departmental systems, why not, where applicable, install integrated, shared information systems?** Examples of underdeveloped, underutilized systems that are candidates for integrated solutions are:

- information about all the property in the City, whether City-owned or not;
- a wide variety of traditional City approval and record-keeping processes;
- community development information;
- information sharing between City departments; and
- financial systems.

To develop an integrated approach, City departments can start by agreeing to participate in a cooperative process to learn how information processing and activities can be reengineered using modern information technology. Relational databases connected to desktop systems via an organization-wide

network will reduce the barriers for cooperation. It will be incumbent on department directors to think more about integrated, Citywide information systems and less about narrowly focused, departmental systems.

Of course, some departments have one or more highly specialized functions. It would be foolish to attempt to squeeze every function into a single, integrated system. This is not a part of ITD's plans; instead, ITD hopes that all departments can cooperatively look first for "low-hanging" fruit that could save money and/or dramatically improve services. The City's new continuous improvement initiative has already started the process to think along these lines.

Based on the discussion contained in this section, the new Collaborative Business Model for the City is outlined in Appendix C.

strategic plan conclusion

The City of Sunnyvale Information Technology Strategic Plan reflects the City's overall strategic planning process. The City's integrated approach to planning, budgeting, customer service, innovation, and operations is embedded in this plan. Major emphases include:

- A focus on both external and internal customers.
- A groundwork for more rigorous and better informed cost-benefit analyses to be applied to IT investments.
- A streamlining of City processes and using information technology to improve the efficiency and effectiveness of City services.
- The development of effective technological, organizational, and interpersonal networks to improve communication.
- The creation of a technological vision and a set of goals and objectives that are comprehensible, extensive, and focused.

This Plan's primary goal is to prepare the City of Sunnyvale for the challenges and opportunities, from an IT perspective, for the next five years. While technology creates much of its own demand with ever faster, more powerful and cheaper tools, the only true demand for technology comes when humans embrace and incorporate technology into their human world. This Strategic Plan will assist the City in embracing useful cost effective IT tools while avoiding wasteful, obsolete, and/or unproven technologies.

Finally, as a reminder, this is a strategic plan. It is not a collection of tactical implementation plans. Specific tactical plans, capital projects, and special projects are the appropriate mechanisms to address specific business requirements with particular information technologies.

strategic plan

table of appendices

Appendix

Appendix A
City's Target Environment

The City's information technology target environment varies according to its business requirements. The following describes an overall target environment and a summary of the various components.

Overall Environment

The heart of the City's current and future information technology environment is and will be its digital network. This digital network comes in many forms including wireless, the public telephony network (now almost completely digital), the Internet, etc. Although the City may not "own" the Internet, the City can develop virtual private networks customized for City use. In effect, the Internet becomes an extension of the City's network.

City staff, partners, and customers will connect a variety of devices to the City's "extended" network in order to conduct City business. Assessments and projections must be made concerning the City's business requirements and types of devices that will interconnect to the City network. Although there are a multitude of devices and approaches, the most prominent ones are obvious and will be the primary modes of interconnection.

Over the coming five-year planning horizon, web standards and web-enabled devices will become the primary target environment. This applies to internal Intranet applications as well as to external Internet applications.

Other automated communication standards and devices such as Windows-based client server systems and host-based systems will coexist with web systems, but wherever possible, the same network system will be used by all systems.

Desktop Environment

Computer-based systems are heavily used in the office environment. Just as trucks enable truck drivers to move tons of goods from point A to point B, desktop computers have traditionally enabled office workers to move and process information from one point to another. While computers will be used in a variety of environments in a decade or so, the office remains the major focus of computing systems.

City office workers, almost without exception, will need a personal computer connected to the City network. This was true five years ago, and this Plan assumes the same requirement will exist five years into the future. This paradigm should remain constant throughout this period. The only elements of change should be:

1. increased speeds (e.g., processor, disk drives, network, etc.);
2. additional capability created by additional computing power;
3. new add-on functionality (e.g., desktop video training);
4. new software products with new functions; and
5. increased and improved information storage handling capacity.

Workgroup Environment

The term "workgroup" is used in place of "department" because the combination of new modes of organizing work and technology will enable semi-permanent as well as ad hoc workgroups to coexist. Workgroups will require automated tools to assist their activities. They may need a dedicated web site for six months in order to complete a project. They may need a permanent data storage system to archive information for legal reasons.

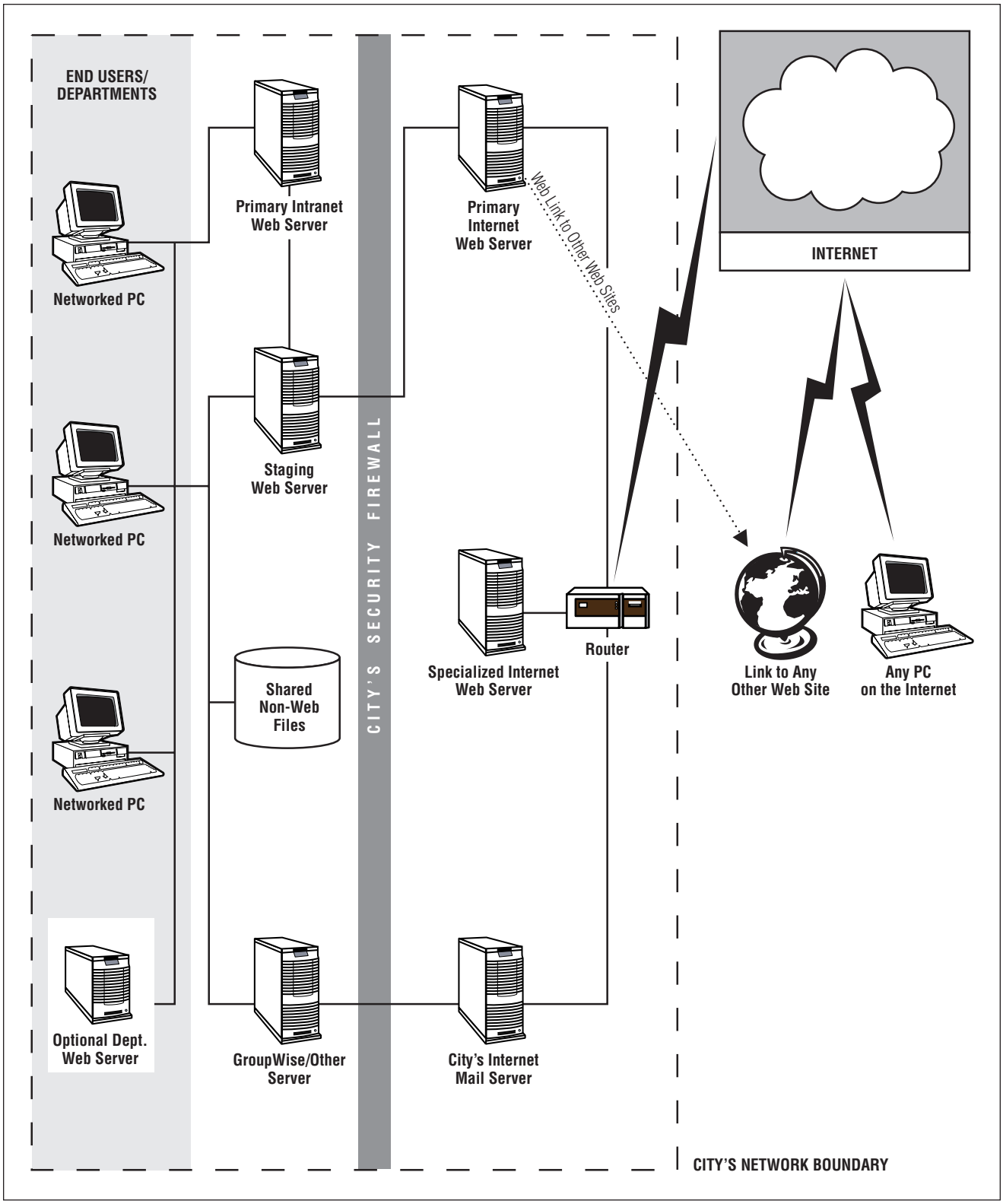
Citywide Environment

Many automated City processes cut across all boundaries. Examples include human resources, payroll, budgeting, electronic mail, etc. These processes require secure Citywide access and centralized data repositories. These data repositories must also be coordinated with each other in order to reduce duplication and data inconsistencies while fostering the reuse of information by other departments.

Other Environments

Technologies other than those mentioned above exist and will continue to emerge over the next five years. Likewise, there are specialized devices and environments that do and will exist. Examples include: wireless technologies, geo-positioning satellite technologies, telephony, etc. These specialized environments will exist within their own domains, but every effort should be made to integrate them, wherever practical, into the City's overall target environment.

Functional Overview of the City's Network Services



Appendix B
Application Development and Data Architecture Trends

This table describes the principal types of computing styles and the current trends in the computing industry. These models also represent past, present, and future courses for the City.

Primary Factors	1970 - 1994	1994 - 1998	1999 +
User Interfaces	Dumb terminal & PC - DOS	PC - Windows networked/standalone	PC - Windows & Web browser
Mission Critical Data stored at	Mainframe & standalone PCs	Servers & standalone PCs	Servers
Data organized as	Non-relational databases	Relational databases	Relational databases (object databases?)
Means of File exchange	Sneakers & mailing diskettes	City network	City network and the Internet
Data integration between departments	Integrated by individual mainframe applications	The beginning of the transition to an architecture and data integration model	Integrated by a common application and data architecture
Distribution of reports	Physical distribution of paper reports	Physical distribution of paper reports	Electronic publishing and online access to report information
Data storage / backup	Tape backup on mainframe	Tape backup from network servers	Multi-tiered data storage architecture which would include a backup / archival server
User authentication	Mainframe passwords	Network server passwords	Passwords with workstation certificates
Data privacy (when required)	None	None	Data encryption
Non-computerized applications (e.g., paper-based transaction systems)	Not cost-effective to automate during this period	Some attempts to automate, but generally not cost-effective	The advent of Internet and Intranet tools will slowly eliminate virtually all paper-based systems

Appendix C
A New Collaborative Business Model

In order to prevent application obsolescence and inflexibility, ITD will lead the effort to systematically transfer all applications from the older architectures to more modern ones over the next four or five years. This table provides a sampling of the proposed applications.

Major Applications	Replacement Period	Old Architecture	New Architecture
Financial Management	1996 - 1999	Host/ Terminal, Mostly Batch Processing	PC Windows "Fat" Client / UNIX Server, Mostly Online Processing
External Publishing , Communications	1996 - 2005	Printed media, mail, walk-in, telephone	Web servers and electronic mail on the Internet with less emphasis on mail, walk-in and the telephone
Internal Publishing, Communications and Training	1997 - 2000	Printed media, mail, memoranda, telephone	Intranet web server, electronic mail, multimedia presentations and training materials
Library Management	1998 - 2005	Host / Terminal	Web and Internet interface to public functions with web and Windows interfaces for staff functions
Geographical Information	1997 - 2004	Mostly non-existent	Database-oriented system that will support both staff and public requirements
Maintenance Management	1998 - 2005	Mostly non-existent	Intranet-based database server
Permitting and Inspections	1997 - 2002	Host / Terminal, batch system. Customer interaction: walk-in, mail, telephone	Web server, electronic mail and automated plan check / file exchanges.

Toward the Target IT Infrastructure

All organizations face a similar set of IT infrastructure issues. Many organizations, by their actions, view the selection of IT products and services as a departmental prerogative. Before the advent of electronic communication and shared computer processes (e.g., groupware, advanced electronic mail systems, etc.), there was less need for a more coordinated approach. A department doing paper data collection and input of timekeeping could purchase a unique turnkey computer system and work in isolation. However, as network applications came into being, the possibility for greater application homogeneity increased. Unless an organization wanted three or four separate terminals or computers on every desk (a few organizations do), the desire for homogeneous, open systems becomes an imperative.

This table summarizes Sunnyvale's major IT infrastructure choices, and calls for a planned, coordinated approach to IT infrastructure creation and maintenance.

	Uncoordinated	Coordinated
Voice Communications	Each department makes its own arrangements with telephone companies	ITD maintains the cable infrastructure and outsources dial tone
Video and other Forms of Communication	Each department makes its own arrangements	ITD maintains the cable infrastructure and outsources video/other forms of delivery
Text-oriented information sharing	Each department is able to make its own arrangements but may not be able to share with other departments	ITD maintains the network infrastructure and facilitates sharing via homogeneous hardware and software standards
Computer multi-media information sharing	Each department is able to make its own arrangements but may not be able to share with other departments	ITD maintains the network infrastructure and facilitates sharing via homogeneous hardware and software standards
Workflow and transaction processing	Each department is able to make its own arrangements but may not be able to work effectively with other departments	ITD maintains the network infrastructure and facilitates workflow and transaction processing via homogeneous hardware and software standards

Major Planned Projects

In order to achieve the target environments and to transition the City's core applications to a modern open distributed platform, ITD has identified the following major projects:

- Replacement of the Financial Management System
- Implementation of an Information Distribution and Electronic Communication System via the Internet and a citywide Intranet
- Replacement of the Utility Billing System
- Development of the SunGIS (geographic information system)/Smart Permit System
- Implementation of the Infrastructure Maintenance Management System
- Replacement of the Computer-Aided Dispatch and Records Management Systems for Public Safety
- Upgrade of the Human Resources/Payroll System
- Implementation of a Citywide Records Management System
- Replacement of the City Telephone Switch
- Upgrade of the Audio/Visual Presentation System for the Council Chambers
- Replacement of the Public Safety and Parks and Recreation/Public Works Radio Systems

Organizational Development and Information Technology

Information technology is not the "be all, end all" for most organizations. Good information technologies are enabling tools and disciplines that assist organizations to evolve and improve. However, the best technologies will not automatically enable organizations to be efficient or effective. Organizations that stress organizational development typically welcome modern information technology, but they should also embrace long term planning, fiscal controls, business process reengineering, enlightened employee relations strategies, etc.

Modern information technology can support and enable most organizational development efforts by:

- Developing computer-based models that track and/or simulate important organizational processes (e.g., financial, human resources, service delivery, etc.);
- Increasing the speed and effectiveness of communicating and learning within an organization;
- Increasing the speed and effectiveness of communication and cooperation between the organization and its customers and suppliers;
- Allowing for improved data collection to measure performance effectiveness;
- Enabling organizations to completely reengineer important organizational processes; and
- Enabling organizations to incrementally improve organizational processes.

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